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**From:** Doug Wight (Generation - 34) [/O=DOMINION/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=DOUGLA7]  
**Sent:** 2/17/2016 12:46:54 PM  
**To:** David R Payne (Generation - 34) [/O=DOMINION/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=Davi955]  
**CC:** Michael J Winters (Generation - 34) [/O=DOMINION/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=MIC1082]  
**Subject:** FW: Glover Pipe Abandonment Work Plan  
**Attachments:** Outfall 010 Plugging Thoughts

Ray, If you have not seen this, please review GAI's comments and forward through Mike Winters.

Thanks

**From:** Scott Quinlan [mailto:s.quinlan@gaiconsultants.com]  
**Sent:** Wednesday, February 17, 2016 11:58 AM  
**To:** John A Cima (Generation - 34)  
**Cc:** David R Payne (Generation - 34); Doug Wight (Generation - 34); Shaikh Z Rahman (Generation - 34); Michael J Winters (Generation - 34); Michael A Glagola (Generation - 34); John Klamut; Kenneth Roller (Services - 6); John DeBarbieri  
**Subject:** RE: Glover Pipe Abandonment Work Plan

Thanks for the input both John and Mike. We will bring this up with Glover. I have attached an email that I sent to John Glover this morning that they are working through. The team can review and comment on that if desired.

My main concern was the use of the steel plate and "deadman" system – both technically and environmentally. Based on discussions with Ken Roller confirming the environmental concerns, we can nix that alternative. Contact me if you have any questions. Thanks.

Sincerely,

**Scott C. Quinlan, PE**  
Director – Energy Water Resources Engineering and Planning

00012927

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**From:** John A Cima (Generation - 34) [<mailto:John.A.Cima@dom.com>]

**Sent:** Wednesday, February 17, 2016 9:30 AM

**To:** John Klamut <[J.Klamut@gaiconsultants.com](mailto:J.Klamut@gaiconsultants.com)>; Scott Quinlan <[s.quinlan@gaiconsultants.com](mailto:s.quinlan@gaiconsultants.com)>

**Cc:** David R Payne (Generation - 34) <[david.r.payne@dom.com](mailto:david.r.payne@dom.com)>; Doug Wight (Generation - 34) <[doug.wight@dom.com](mailto:doug.wight@dom.com)>; Shaikh Z Rahman (Generation - 34) <[Shaikh.Z.Rahman@dom.com](mailto:Shaikh.Z.Rahman@dom.com)>; Michael J Winters (Generation - 34) <[Michael.J.Winters@dom.com](mailto:Michael.J.Winters@dom.com)>; Michael A Glagola (Generation - 34) <[michael.a.glagola@dom.com](mailto:michael.a.glagola@dom.com)>

**Subject:** RE: Glover Pipe Abandonment Work Plan

John/Scott,

I have reviewed Glover's proposed work plan and have had discussions with Mike Winters. I agree with Mike's assessment below and no additional comments. It is extremely important that we consider shrinkage and a possible path for water to seep along the pipe/grout interface and ultimately find its way to the downstream end of the pipe. The right grout and admixtures combined with Mike's proposed water-stop idea will give Dominion the confidence going forward that we have solved the issue of concern.

*John A. Cima P.E.*

John A. Cima, P.E.

00012928

**From:** Michael J Winters (Generation - 34)

**Sent:** Wednesday, February 17, 2016 8:16 AM

**To:** 'John Klamut'; Scott Quinlan

**Cc:** John A Cima (Generation - 34); David R Payne (Generation - 34); Doug Wight (Generation - 34); Shaikh Z Rahman (Generation - 34)

**Subject:** Glover Pipe Abandonment Work Plan

John,

I have a couple of comments to consider before approving Glover's plan.

Our goal per our environmental colleagues is to seal the pipe from seepage, not simply abandon in-place. Therefore, we should consider the following:

- **Material Specification:** Not simply 2,000 psi concrete. Probably a non-shrink sanded grout. For perspective 'average' concrete shrinkage could be 5 hundredths of an inch in 72 inches. Surprisingly that is over 5 square inches of flow path. Longitudinal shrinkage would be more on the order of  $\frac{3}{4}$  inch, which would probably manifest itself in multiple transverse cracks.
- **Heat of Hydration:** This is quite a massive pour, i.e. the minimum dimension is 6 feet and a single un-jointed placement of over 105 CY. We should do our best to minimize heat generation as the resulting cracks could provide significant seepage paths. Consider Type IV cement and fly ash (that would be too ironic, I want to include it just for fun).
- **Water stop:** Nothing elaborate, but whatever we do there will be a joint between the placement and the pipe. Water finds a way. I propose a simple stick-on water stop like Sika Swellstop at strategic locations (near the inlet, midway and near the outlet?).



#### SIKA SWELLSTOP WATERSTOP

Sika Swellstop is a flexible, coiled strip of butyl rubber and a swellable clay waterproofing compound that swells upon contact with water to form a long lasting compression seal in concrete joints.



I think all these things are relatively simple, without inordinate cost, yet they should improve our end result.

*Mike Winters*

Michael Winters, P.E.

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